We claim:

1. A semi-permanent reference electrode for use in field applications, said semi-permanent reference electrode being associated with a working electrode to form a cell, said semi-permanent reference electrode and said working electrode being used in a system with a voltmeter, said voltmeter used to measure the potential difference between said working electrode and said semi-permanent reference electrode, and a power supply, said power supply being used to supply a potential to said working electrode, said semi-permanent reference electrode comprising: an electrode body forming an electrode internal chamber; a fill solution contained within said electrode internal chamber, said fill solution being a saturated salt solution with a constant pH formed from a solid salt, wherein said solid salt is hygroscopic and has a low deliquescence point; and a wire situated within said electrode internal chamber for making contact with said fill solution;
wherein said fill solution does not dry in field applications because said fill solution can draw moisture from the environment to maintain itself in solution.

2. The semi-permanent reference electrode of Claim 1, further comprising a cap removably situated within said electrode internal chamber.

3. The semi-permanent reference electrode of Claim 2, further comprising a porous plug removably situated within said electrode internal chamber.

4. The semi-permanent reference electrode of Claim 3, wherein said solid salt is hydrolyzable.

5. The semi-permanent reference electrode of Claim 4 wherein said cap further comprises an opening for passage of moisture from the environment into said electrode internal chamber.

6. The semi-permanent reference electrode of Claim 5 wherein said wire maintains a relatively stable reference point with a low rate of corrosion.

7. The semi-permanent reference electrode of Claim 6 wherein said wire is an oxidized metal.

8. The semi-permanent reference electrode of Claim 7 wherein said solid salt is selected from the group consisting of magnesium salt, calcium salt, zinc salt and iron salt.

9. The semi-permanent reference electrode of Claim 8 wherein said solid salt is magnesium chloride or sodium magnesium acetate.

10. The semi-permanent reference electrode of Claim 9 wherein said electrode body is formed from an inert material.

11. The semi-permanent reference electrode of Claim 7 wherein said wire is formed from oxidized tungsten or oxidized iridium.

12. A method of using the semi-permanent reference electrode of Claim 1 for measuring corrosion potential of a metallic object such as a pipeline, storage tank or bridge in a system utilizing a voltmeter, wherein said method comprises: placing said semi-permanent reference electrode directly above said metallic object; first connecting said semi-permanent reference electrode to said voltmeter; second connecting said voltmeter to said metallic object; and measuring the potential difference between said metallic object and said semipermanent reference electrode to determine the corrosion potential of the metallic object.

13. The method of Claim 12 wherein said solid salt is hydrolyzable.

14. The method of Claim 13 wherein said solid salt is selected from the group consisting of magnesium salt, calcium salt, zinc salt, and iron salt.

15. A method of using the semi-permanent reference electrode of Claim 1 for measuring potential of a cathodically protected metallic object such as a pipeline, storage tank or bridge in a system utilizing a voltmeter, wherein said method comprises the steps of:

producing a current flow onto said metallic object for cathodic protection to form a cathodically protected metallic object;

placing said semi-permanent reference electrode directly above said cathodically protected metallic object;

first connecting said semi-permanent reference electrode to said voltmeter;

second connecting said voltmeter to said cathodically protected metallic object; and

measuring the potential difference between said cathodically protected metallic object and said semi-permanent reference electrode to determine whether full cathodic protection for said metallic object has been obtained.

16. The method of Claim 15 wherein said solid salt is hydrolyzable.

17. The method of Claim 16 wherein said solid salt is selected from the group consisting of magnesium salt, calcium salt, zinc salt, and iron salt.